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UNITRON IMPORTANT NEWS FOR BIOLOGISTS

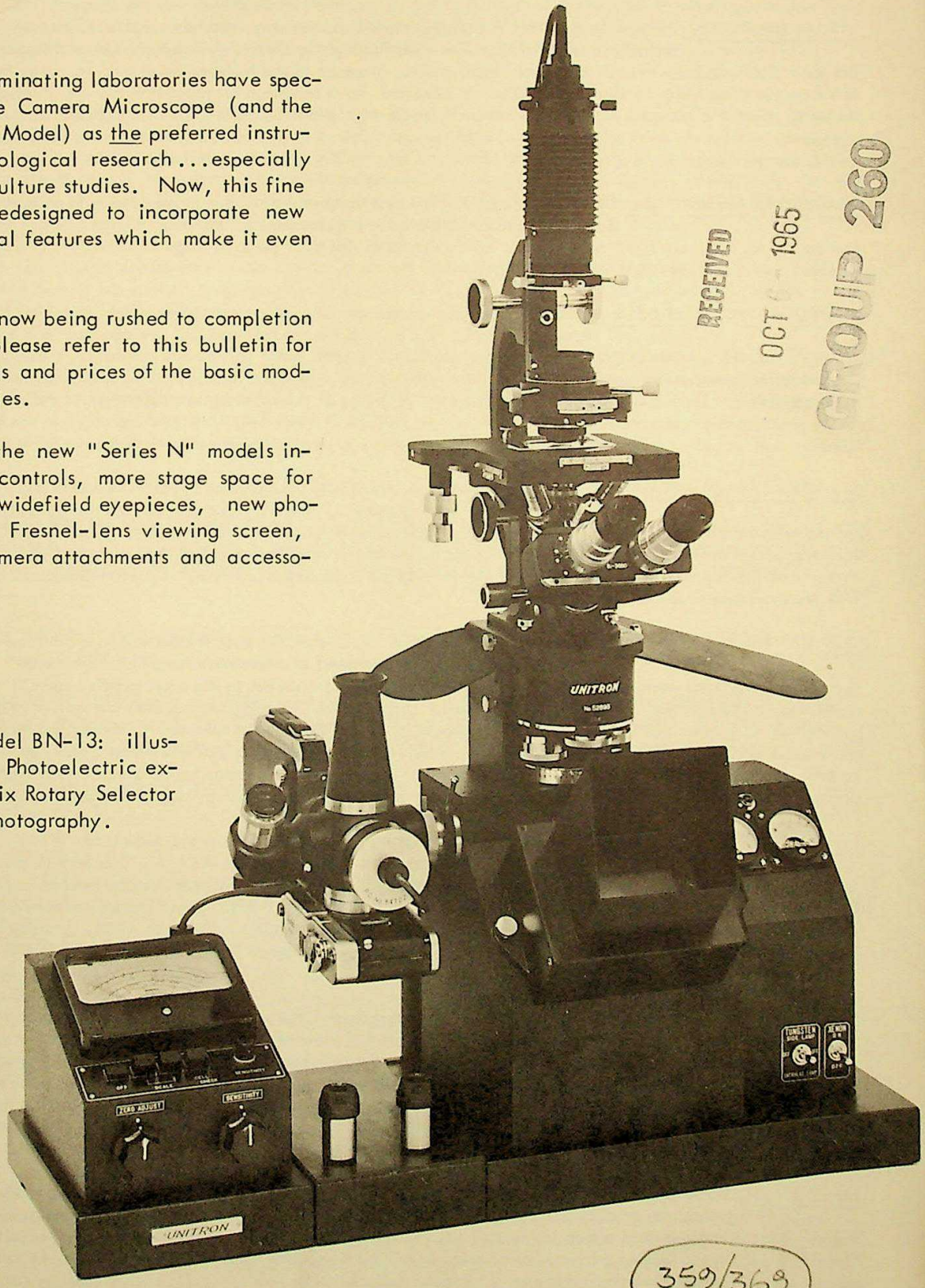
NEW "SERIES N" CAMERA MICROSCOPES

350/308

For many years, discriminating laboratories have specified UNITRON Phase Camera Microscope (and the companion Brightfield Model) as the preferred instrument for advanced biological research ...especially in the field of tissue culture studies. Now, this fine instrument has been redesigned to incorporate new mechanical and optical features which make it even better than before.

A detailed catalog is now being rushed to completion ...in the meantime please refer to this bulletin for complete specifications and prices of the basic models and extra accessories.

Improved features of the new "Series N" models include coaxial stage controls, more stage space for large culture flasks, widefield eyepieces, new photo projection lenses, Fresnel-lens viewing screen, arm rests and new camera attachments and accessories.



New "Series N" Model BN-13: illustrated with accessory Photoelectric exposure Meter and Romix Rotary Selector for 35mm and movie photography.

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UNITRON INSTRUMENT CO. MICROSCOPE SALES DIVISION 66 NEEDHAM STREET, NEWTON HIGHLANDS 61, MASS.

* SPECIFICATIONS *

OBJECTIVE LENSES: Five parfocal, coated, achromatic objectives are included as standard equipment: a non-phase scanning lens 5X(N.A. 0.10) and phase objectives 10X(N.A. 0.30), 20X(N.A. 0.40), 40X(N.A. 0.65), and 100X(N.A. 1.25) oil immersion. The phase objectives are available in two contrasts dark-medium and bright-medium; dark contrast will be furnished unless bright contrast is specifically requested. A quadruplc revolving nosepiece permits rapid interchange. Additional objectives are also available as listed below.

VISUAL EYEPIECES: The new Series WFH Widefield, High-Eyepoint eyepieces are supplied in two magnifications: WFH10XR Micrometer and WFH15X. The wide field of the WFH10XR makes the use of 5X eyepieces unnecessary - you see the same field and have the advantage of higher power. Because of the high-eyepoint feature, even wearers of eyeglasses can benefit from the wide fields of view. The 10 power eyepieces have provision for rapid interchange of reticles and a helical focusing mount to adjust the focus for individual vision. A linear micrometer reticle with metric calibration is included as standard equipment; additional reticles are available for special applications. Paired eyepieces are furnished with the binocular model. Removable eyeguards are provided. Accessory widefield WFH12.5X and WF20X eyepieces are listed below.

BINOCULAR MECHANISM: (Binocular models) - The inclined binocular body is provided with both interpupillary and diopter adjustments to accommodate the requirements of individual vision. All prisms and compensating lenses are coated for maximum light transmission. Since the binocular body has unit magnification, the normal optical balance of the objectives and eyepieces is not artificially disturbed.

PHOTOGRAPHIC EYEPIECES: These are projection eyepieces of superior correction, especially designed for photography. The four eyepieces, 10X, 12.5X, 15X Micrometer and 20X are mounted on a rotatable turret for rapid interchange. The micrometer eyepiece contains a scale 1cm in length subdivided in units of 0.1mm. The absolute reading depends on the objective lens used so that, for example, each division represents 0.01mm with the 10X objective, and one micron with the 100X objective. The scale appears superimposed on the image of the specimen at the bottom of the viewing screen or photograph. These photographic eyepieces are used in connection with the built-in 3-1/4"x4-1/4" camera and the accessory Polaroid Land and 35mm camera attachments. The magnification of the eyepiece in use is read easily through a window in the eyepiece turret.

3-1/4"X4-1/4" CAMERA AND VIEWING SCREEN: A 3-1/4"x4-1/4" camera for cut film and plates is built into the base of the instrument. A compur-type shutter furnishes speeds from one second to 1/250 second with intermediate speeds, bulb, and time. Six plateholders are provided as standard equipment. The Fresnel-lens viewing screen provides brilliant, even illumination under conditions of ordinary room lighting. Tracings and measurements may be made directly on the screen. A 3-1/4"x4-1/4" Polaroid Camera Attachment and 4"x5" Camera Attachment for both Polaroid and sheet film are available as accessories.

CONDENSER: A triple-divisible phase condenser, N.A. 1.25 provides both normal and long working distances. Four phase annuli and one clear opening for brightfield are mounted in a rotatable turret for interchange. Since the construction of the turret changer allows each annulus to be factory precentered with respect to the corresponding objective phase plate, the need for centering by the operator is reduced to a minimum. The external centering thumbscrews are nevertheless often useful to compensate for shifts in alignment due to refraction by the specimen or containers. An aperture iris diaphragm for brightfield and two filter holders are included. The entire condenser unit is centerable (independently of the phase annuli) by means of a second set of thumbscrews. A centering pinhole fixture is supplied so that optimum alignment may be achieved in a straightforward manner. The condenser is focused by means of a diagonal cut rack and pinion adjustment with a long 73mm range of travel.

LONG WORKING DISTANCES: The normal condenser working distance for phase microscopy is 1.5mm from the bottom of the condenser lens to the top of a 1mm thick glass slide; i.e., 2.5mm to the specimen plane. For special applications (for example, in studies of tissue cultures), a longer working distance is often needed to accommodate special glassware. By unscrewing one or both of the removable lenses in the divisible condenser, phase images are obtained at the following increased condenser working distances: 40mm for 10X, 28mm for 20X, 4mm for 40X, 2.75mm for 100X. In addition, a long working distance for the condenser may be combined with a long (5.8mm) working distance for the UNITRON PH-FF40X Phase Objective as described below.

STAGE: The stage area measures 142x132mm and accommodates large containers and special apparatus. Micromanipulators, warming chambers, and micro-tools are accessible and in full view of the operator. Control of the mechanical stage motions is made using coaxial controls, conveniently located adjacent to the left-hand fine focus control. Using the convenient arm rest, both the stage and focus can be adjusted comfortably using a single hand only. The mechanical stage provides orthogonal motions over a range of 30x30mm and reads to 0.1mm by vernier. A calibrated stage plate rotatable through 360° is provided for use with polarized light to permit orientation of the specimen for better composition. Three additional circular stage plates with openings of varying diameters and stage clips are also included.

FOCUSING: Coarse focusing is accomplished by diagonal-cut rack and pinion adjustment of the stage height itself. When using glass slides or dishes in which the specimen is at the level of the stage, the coarse focusing need never be used; the stage is merely lowered until a stop is engaged and the specimen is then in focus subject to minor adjustment using the micrometer screw fine focusing. Raising the stage to accommodate specimens hanging below the stage level does not alter either the condenser adjustment or lamp position since these move together with the stage. The dual fine focus controls are easily accessible and arm rests on each side of the instrument insure comfortable operation.

ILLUMINATING SYSTEM: A high-intensity, Koehler-type illuminator operates directly from a heavy duty, 5 amp. transformer housed in the microscope base itself. A control knob provides a continuous range of intensities for both visual observation and photography. Both a voltmeter and ammeter are provided for convenience in recording and repeating given illuminating conditions. The lamphouse contains a well corrected and remarkably efficient, four lens condensing system which focuses a sharp, intense image of the bulb filament on the condenser aperture. A field diaphragm, built-in heat absorbing filter, and a filter slot are included. The entire lamp is centerable by means of thumbscrews to allow critical centering of the field diaphragm. In addition, the bulb socket itself is individually centerable to insure correct positioning with respect to the optical axis and may be decentered for oblique effects. An accessory plano-concave mirror to attach to the lamp bracket is included to permit use of auxiliary light sources (such as ultra-violet). The microscope body contains a built-in electrical system to accommodate an accessory side illuminator for oblique or vertical reflected light and an accessory high-intensity xenon system which will be made available as a separate accessory.

FILTERS: Three mounted filters are provided: green, yellow, and daylight-blue. (In addition, three polarizing filters are included as described below.)

POLARIZED LIGHT: The light is polarized by a graduated, rotatable polarizer which is placed in the condenser filter slot. The eyepiece analyzer is inserted into a slot in the eyepiece tube and the angle of rotation read from a graduated scale. For observation on the viewing screen and photography, a photo-analyzer is placed over the camera shutter.

SPECIAL GLASSWARE: Three sets of petri dishes with covers and three special slides are included. This glassware contains a circular window having the correct cover glass thickness needed to maintain optical corrections and bring the specimen within the working distance of even the oil immersion objective.

PHYSICAL SPECIFICATIONS: The instrument is mounted on a heavy base with shock absorbing feet which makes it practically immune from vibration. Because of its unique design, it is extremely economical of desk space and the base occupies an area only 9"x13". The height is 32"; weight 85 lbs.

* PRICE LIST OF BASIC UNITS *

UNITRON "SERIES N" PHASE-CAMERA-MICROSCOPE, MONOCULAR MODEL N-13: Complete as described above with optics, 3-1/4"x4-1/4" camera, plateholders, cable release, polarizing apparatus, filters, tools, glassware, 6 spare bulbs and plastic dustcover. Individual, fitted and handsomely finished cabinets are provided for the instrument and accessories. Complete instructions are furnished..... $1470

UNITRON "SERIES N" PHASE-CAMERA-MICROSCOPE, BINOCULAR MODEL BN-13: Same as Model N-13 but with binocular eyepiece system and paired eyepieces..... $1660

UNITRON BRIGHTFIELD CAMERA-MICROSCOPE, MONOCULAR MODEL N-12: Same as Model N-13 but designed for brightfield microscopy only. Five objectives are included as standard equipment: 5X, 10X, 20X, 40X, 100X. A triple divisible condenser (N.A. 1.25) is furnished in place of the phase turret condenser..... $1297

UNITRON BRIGHTFIELD CAMERA-MICROSCOPE, BINOCULAR MODEL BN-12: Same as Model N-12 but with binocular eyepiece system and paired eyepieces..... $1497

* EXTRA ACCESSORIES - SPECIFICATIONS and PRICE LIST *

3-1/4"X4-1/4" POLAROID LAND CAMERA ATTACHMENT: Polaroid "10 second" photography is ideal for routine applications in which a finished 3-1/4"x4-1/4" print is desired without the delay normally required for processing. Installation is made in a jiffy: merely remove the regular viewing screen and replace it with the Polaroid Camera attachment. A special ground glass viewing and focusing screen is supplied. The Land Camera Back is included. Model NUM-34..... $115

4"X5" CAMERA ATTACHMENT: Accommodates the #500 Polaroid Land Film holder or standard plateholders for conventional film. Because of the longer projection distance with this attachment, photographic magnifications are 1.25 times those obtained for 3-1/4"x4-1/4" photography. Complete with ground glass viewing screen. Film holders not included. Model NUM-45..... $89

DEVIATING PRISM ASSEMBLY: The deviating prism is used to redirect the light path from the main camera and viewing screen to accessories connected to the left side of the microscope body. These accessores are described below and include the Photoelectric Exposure Meter, the Romix Rotary Selector for 35mm and Motion Picture Photography, and the Mirax 35mm Attachment. The position of the deviating prism is controlled by a lever: when the lever is pushed backward, the prism moves into the main camera body, intercepting the light rays; when the lever is pulled forward, the prism moves out of the light path and the photographic image is directed instead to the main camera and viewing screen. Price includes installation and alignment. Model NUM-DP..... $55

ROMIX ROTARY SELECTOR FOR 35MM AND MOTION PICTURE PHOTOGRAPHY: The Romix Rotary Selector is a beam-splitter device which, in its most complete form, combines in a single unit a 35mm camera attachment, a motion picture camera attachment, and a coupling mechanism for the photocell of the Photoelectric Exposure Meter. The operator can determine exposure and photograph with any of the standard or accessory camera attachments in rapid succession. All camera mechanisms remain permanently in place, ready for instant use. Romix is used in conjunction with the Deviating Prism Assembly described above. Rotation of the Romix selector arm sends the light path, in succession, to the following: 1) photocell of the exposure meter, 2) finder eyepiece for 35mm photography, 3) 35mm camera back, 4) motion picture camera. In addition, light is directed at all times to the movie finder eyepiece. (Camera backs not included.)

ROMIX-35: Complete with finder eyepiece mechanism for 35mm photography: provision for attaching photocell of Exposure Meter and for future installation of accessories for motion picture photography $124

ROMIX-35-MOV: Complete with finder eyepiece mechanisms for both 35mm and motion picture photography; adjustable movie camera support bracket; movie camera coupling tubes; provision for attaching photocell $310

PHOTOELECTRIC EXPOSURE METER: Gives direct exposure readings for any of the camera mechanisms. A stable, transistorized circuit provides instantaneous operation, a high degree of sensitivity, and the capability of measuring a wide range of exposure values. Deviating Prism Assembly, NUM-DP, is used to intercept the light path and direct it to the photocell. The Romix Rotary Selector (described above) has provision for accommodating the photocell; for installations which do not include Romix, Adapter EXP-AD is used instead. In either instance the cell remains permanently attached and is moved rapidly into the optical path for exposure determinations.

MODEL NUM-EXP Photoelectric Exposure Meter: complete unit mounted on metal base to match the microscope body with photocell to fit Romix or Adapter EXP-AD. (Deviating Prism NUM-DP is required) $255

MODEL EXP-AD Photocell Adapter: required for Model NUM-EXP Exposure Meter when used with Romix 11

MODEL EXP-EB Extension Base: for joining the Exposure Meter to the microscope 20

LONG WORKING DISTANCE 40X OBJECTIVES: The UNITRON FF40X Objective (N.A. 0.45) has a remarkably long working distance: 5.8mm, as compared to about 0.5mm for the usual objective of 40X initial magnification. It is ideal for applications in which the conditions of the experiment make it impossible to bring the object within the short focusing range of the ordinary 40X objective. Two versions of the FF40X objective are available; one for ordinary brightfield and one for phase microscopy.

FF40X Objective for brightfield microscopy $149

PH-FF40X Phase Objective for both phase and brightfield 189

LOW POWER ACCESSORIES: The total magnifications available for photography and observation on the viewing screen may be lowered to 5X using the low-power, non-phase objectives. A wide field of view with considerable depth of focus is obtained. Attaching the accessories takes but a minute. The unit containing the eyepiece tube and quadruple revolving nosepiece is replaced by a special nosepiece which holds three coated objectives of magnifications 0.5X, 1X, and 2X, equipped with iris diaphragms. These objectives, as used with the photographic eyepieces, give magnifications of 5X, 6.25X, 7.5X, 10X, 12.5X, 15X, 20X, 25X, 30X, 40X..... $144

ACCESSORY OBJECTIVES: Phase Objectives contain a phase plate which tends to scatter a small amount of light when used for brightfield microscopy. Consequently, for critical observations and photography at higher powers in brightfield, regular objectives are preferable to achieve highest contrast. All objectives are anti-reflection coated.

40X Objective (N.A. 0.65)..... $23.50

60X Objective (N.A. 1.0) oil immersion 38.00

60X Objective (N. A. 0.80) $32.50

100X Objective (N. A. 1.25) oil immersion 43.50

ACCESSORY EYEPIECES:

WFH12.5X Widefield, High Eyepoint: for monocular models ..... $29 for binocular models $58.00

WF20X Widefield, Medium Eyepoint: for monocular models ..... 16 for binocular models 32.00

TISSUE CULTURE INCUBATOR: Plexiglass enclosure and blower. Maintains 37°C. Refer to separate bulletin $399.00

MODEL MHS VACUUM HEATING STAGE: For temperatures to 500°C. Refer to separate bulletin 390.00

MONOCULAR TUBE FOR BINOCULAR MODELS: Recommended for use with special-purpose eyepieces, such as filar type. 19.25

SIDE ILLUMINATOR: As used in UNITRON Metallographs. For side or oblique lighting. Mounting bracket included..... 97.00

VERTICAL ILLUMINATING SYSTEM: With plane glass reflector. (Write for information.)

SLIDE CLAMP: Attaches to mechanical stage and holds slide in fixed position. (Illustrated in Series MIC catalog sheet) .. 7.75

Prices f.o.b. Newton Highlands, Mass.

UNITRON NEWSLETTER

WE KNOW...you are NOT a metallurgist
but immediately following this notice we are including a brochure on the UNITRON Series N METALLOGRAPHS just the same!

WHY?...Because the preceding temporary announcement literature on the new UNITRON "Series N BIOLOGICAL CAMERA MICROSCOPES" is not really complete, particularly lacking in details and illustrations about many accessory items.

BUT...the Metallograph Brochure lists and describes many accessory items that may be used on both the UNITRON Series N Metallographs and the Biological Camera-Microscopes. Until the new catalog is available, we are apologetically asking you, as a biologist, to refer to the Metallograph Brochure for a description of items that may be used with the new Series N Biological Camera-Microscopes. As a biologist, you will be interested in such items as:

- Low Power Accessories (magnifications from 5X to 40X)
- Polaroid Camera Attachments (including the 4" x 5" that produces fine-grain negatives for reproduction)
- Camera Attachments for 35mm and movie photography (choice of Romix Selectors for 35mm and/or movie, Type S Movie Attachment, Simple Mirax for 35mm...in combination with the Deviating Prism Assembly)
- Photoelectric Exposure Meter to eliminate "guesswork"

NOT VERY FAR AWAY...is a regular catalog brochure that will contain comprehensive data and illustrations for the new UNITRON Series N Camera-Microscopes and all of its associated accessories. At your request, it would be a pleasure to send an advance copy to you as soon as it becomes available.

IN THE MEANTIME...we ask your patience, hoping that the Metallograph Brochure will help you to visualize the many advantages of the UNITRON Biological Camera-Microscopes and Accessories not adequately described in the preceding "News" bulletin. Of course, feel free to request more detailed information, clarification of any points, or our recommendations about the UNITRON Camera-Microscope and Accessories best suited to your particular applications.

UNITRON INSTRUMENT COMPANY

(Detach and Mail)

To:

UNITRON INSTRUMENT COMPANY
66 Needham Street
Newton Highlands, Mass. 02161

Please send a copy of your new catalog describing the UNITRON Series N Biological Camera-Microscopes to:

Name _____ Department _____
Institution _____
Street or P.O. # _____ City _____ State _____